WHAT IS CLAIMED IS:

1. A rotary pump comprising:

a pair of rotors having pumping segments mutually engaged with each other for synchronous revolution in mutually opposite direction within a pump casing;

a pair of hollowing rotor drive shafts supported in gearboxes adjacent said pump casing for integrally rotate with a pair of said rotors; and

a pair of rotor fastening bolts inserted into hollow portions of respective hollow rotor drive shafts to fix said pair of rotors and said pair of hollow rotor drive shafts on the outer end surfaces of said rotor drive shaft under tension,

respective of said hollow rotor drive shafts being synchronously rotated in mutually opposite direction with meshing with synchronous driving gears provided in respective gearboxes,

among both of said hollow rotor drive shafts, one of said hollow rotor drive shaft extends outwardly from said gearbox to form an extended drive shaft portion, a cylindrical frame form transmission coupling having an operation space for operating said rotor fastening bolt being coupled with said extended drive shaft portion for integral rotation.

2. A rotary pump as set forth in claim 1, wherein said pump casing comprises a main casing having a pumping chamber for receiving said pair of rotors and a casing cover flush with the end surfaces of said pair of rotors.

3. A rotary pump as set forth in claim 1, wherein said rotor and said hollow rotor drive shaft are connected by spline coupling for integral rotation, said rotor fastening bolt is inserted through said hollow rotor drive shaft through said rotor from the side of said casing cover, a flange provided on a end portion of said rotor fastening bolt is engaged within a recessed portion on the end surface of the rotor on the side of said casing cover.

4. A rotary pump as set forth in claim 1, wherein said rotor and said hollow rotor drive shaft are connected by spline coupling for integral rotation, said rotor fastening bolt is integrally formed with said rotor, and said rotor fastening bolt is inserted into said hollow rotor driven shaft.

5. A rotary pump as set forth in claim 3, wherein a fastening nut is threadingly engaged with said rotor fastening bolt extending through said hollow rotor drive shaft, at the outer end surface of said hollow rotor drive shaft.

6. A rotary pump as set forth in claim 4, wherein a fastening nut is threadingly engaged with said rotor fastening bolt extending through said hollow rotor drive shaft, at the outer end surface of said hollow rotor drive shaft.

7. A rotary pump as set forth in claim 1, wherein a bolt head to be abutted onto the outer end surface of said hollowing rotor drive shaft is provided on one end portion of said rotor fastening bolt inserted into said hollow rotor drive shaft, and a threaded portion to be threadingly engaged with a threaded hole

provided in said rotor is provided on the other end.

8. A rotary pump comprising:

a pair of rotors having pumping segments mutually engaged with each other for synchronous revolution in mutually opposite direction within a pump casing;

a pair of hollowing rotor drive shafts supported in gearboxes adjacent said pump casing for integrally rotate with a pair of said rotors; and

a pair of rotor fastening bolts inserted into hollow portions of respective hollow rotor drive shafts to fix said pair of rotors and said pair of hollow rotor drive shafts on the outer end surfaces of said rotor drive shaft under tension,

respective of said hollow rotor drive shafts being synchronously rotated in mutually opposite direction with meshing with synchronous driving gears provided in respective gearboxes,

said rotors and said hollow rotor drive shafts being connected by spline couplings for integral rotation,

said rotor fastening bolts being inserted through said hollow rotor drive shafts through said rotors from the side of said casing cover, and

a flange provided on a end portion of said rotor fastening bolt being engaged within a recessed portion on the end surface of the rotor on the side of said casing cover.

9. A rotary pump comprising:

a pair of rotors having pumping segments mutually engaged with each other for synchronous revolution in mutually opposite direction within a pump casing;

a pair of hollowing rotor drive shafts supported in gearboxes adjacent said pump casing for integrally rotate with a pair of said rotors; and

a pair of rotor fastening bolts inserted into hollow portions of respective hollow rotor drive shafts to fix said pair of rotors and said pair of hollow rotor drive shafts on the outer end surfaces of said rotor drive shaft under tension,

respective of said hollow rotor drive shafts being synchronously rotated in mutually opposite direction with meshing with synchronous driving gears provided in respective gearboxes,

said rotor and said hollow rotor drive shaft being connected by spline coupling for integral rotation,

said rotor fastening bolts being integrally formed with said rotors, and

said rotor fastening bolts being inserted into said hollow rotor driven shafts.

10. A rotary pump as set forth in claim 8, wherein, among both of said hollow rotor drive shafts, one of said hollow rotor drive shaft extends outwardly from said gearbox to form an extended drive shaft portion, a cylindrical frame form transmission coupling has an operation space for operating said rotor fastening bolt being coupled with said extended drive shaft portion for integral rotation.

11. A rotary pump as set forth in claim 9, wherein, among both of said hollow rotor drive shafts, one of said hollow rotor drive shaft extends outwardly from said gearbox to form an extended drive shaft portion, a cylindrical frame form transmission coupling has an operation space for operating said rotor fastening bolt being coupled with said extended drive shaft portion for integral rotation.

12. A rotary pump as set forth in claim 8, wherein said pump casing comprises a main casing having a pumping chamber for receiving said pair of rotors and a casing cover flush with the end surfaces of said pair of rotors.

13. A rotary pump as set forth in claim 9, wherein said pump casing comprises a main casing having a pumping chamber for receiving said pair of rotors and a casing cover flush with the end surfaces of said pair of rotors.

14. A rotary pump as set forth in claim 8, wherein a fastening nut is threadingly engaged with said rotor fastening bolt extending through said hollow rotor drive shaft, at the outer end surface of said hollow rotor drive shaft.

15. A rotary pump as set forth in claim 9, wherein a fastening nut is threadingly engaged with said rotor fastening bolt extending through said hollow rotor drive shaft, at the outer end surface of said hollow rotor drive shaft.

16. A rotary pump comprising:
a main casing;
a casing cover cooperated with said main casing for defining a pumping chamber therebetween;
a pair of rotors received within said pumping chamber with mutually meshing pumping segments for synchronous revolution in mutually opposite directions;
a space being defined in one portion of said casing cover;
a cover piston being disposed within said space for movement back and forth with respect to an end surface of said rotor;
an air cylinder being mounted on said casing cover and having a piston rod, to which said cover piston is connected.

17. A rotary pump comprising:
a main casing;
a casing cover cooperated with said main casing for defining a pumping chamber therebetween;
a pair of rotors received within said pumping chamber with mutually meshing pumping segments for synchronous revolution in mutually opposite directions;
a space being defined in one portion of said casing cover;
a cover piston being disposed within said space for movement back and forth with respect to an end surface of said rotor;
a lock cylinder having a lock bolt being mounted on said casing cover for

restricting movement of said cover piston by means of said lock bolt.

18. A rotary pump comprising:
a main casing;
a casing cover cooperated with said main casing for defining a pumping chamber therebetween;
a pair of rotors received within said pumping chamber with mutually meshing pumping segments for synchronous revolution in mutually opposite directions;
a space being defined in one portion of said casing cover;
a cover piston being disposed within said space for movement back and forth with respect to an end surface of said rotor;
an air cylinder being mounted on said casing cover and having a piston rod;
a lock cylinder having a lock bolt being mounted on said air cylinder;
said cover piston being connected to a piston rod projected from one end surface of said piston of said air cylinder;
a piston rod projecting from the other end surface of said piston of said air cylinder being abutted to said lock bolt for restricting movement of said cover piston by means of said lock bolt.

19. A rotary pump comprising:
a main casing;
a casing cover cooperated with said main casing for defining a pumping chamber therebetween;
a pair of rotors received within said pumping chamber with mutually meshing pumping segments for synchronous revolution in mutually opposite directions;
a space being defined in one portion of said casing cover;
a cover piston being disposed within said space for movement back and forth with respect to an end surface of said rotor;
a plurality of air cylinders being mounted on said casing cover in a condition where piston rods thereof are connected with each other, and said cover piston is connected to a piston rod.
and having a piston rod, to which said cover piston is connected.

20. A rotary pump comprising:
a main casing;
a casing cover cooperated with said main casing for defining a pumping chamber therebetween;
a pair of rotors received within said pumping chamber with mutually meshing pumping segments for synchronous revolution in mutually opposite directions;
a space being defined in one portion of said casing cover;
a cover piston being disposed within said space for movement back and forth with respect to an end surface of said rotor;

a plurality of air cylinders being mounted on said casing cover in a condition where piston rods thereof are connected with each other, and said cover piston is connected to a piston rod.
and having a piston rod, to which said cover piston is connected;

a lock bolt being coaxially provided on said air cylinder at the rearmost position, and said cover piston being connected to said piston rod of said air cylinder at the most front side;

a piston or a piston rod of said air cylinder at the rearmost position being in contact with said lock bolt for restricting movement of said cover piston by said lock bolt.